On: 18 January 2015, At: 22:45
Publisher: Routledge
Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK

Royal United Services Institution. Journal

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/rusi19

Explosive Bullets and Their Application to Military Purposes

Major G. V. Fosbery D.C. [a]

[a] H.M. Bengal Staff Corps.

Published online: 11 Sep 2009.

To cite this article: Major G. V. Fosbery D.C. (1868) Explosive Bullets and Their Application to Military Purposes, Royal United Services Institution. Journal, 12:48, 16-27, DOI: 10.1080/03071846809417330

To link to this article: http://dx.doi.org/10.1080/03071846809417330

Evening Meeting.

Monday, January 20th, 1868.

REAR-ADMIRAL SIR FREDERICK W. E. NICOLSON, Bart., C.B., Vice-President, in the Chair.

NAMES of MEMBERS who joined the Institution between the 1st and 20th January, 1868

LIFE.

Gordon, Wm., Lieut.-Col. Bengal Staff Corps. 9*l.*

ANNUAL.

Rawlins, John, Capt. 18th Regt. 1*l.*
Sterling, John B., Capt. Coldm. Gds. 1*l.*
Stone, Cecil P., Lieut. 77th Regt. 1*l.*
Macqueen, D. R., Lieut. 75th Regt. 1*l.*
Alexander, G. G., C.B., Major-General Royal Marine Artillery. 1*l.*
Wood, Elliott, Lieut. R.E. 1*l.*
Leycester, E. M., Capt. R.N. 1*l.*
Ommanney, F. M., Lieut. R.N. 1*l.*
Hogarth, Alexander, Major 1st Aberdeen Rifle Volunteers. 1*l.*
Pinnock, Harris N., Ens. 71st Highl. Light Infantry. 1*l.*
Whish, C. F. D., Cornet 6th Innisg. Drgs. 1*l.*
Cadell, R., Colonel R.A. 1*l.*
Browning, M. C., Capt. 87th Royal Irish Fusiliers. 1*l.*

EXPLOSIVE BULLETS AND THEIR APPLICATION TO MILITARY PURPOSES.

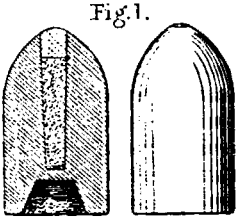
By Major G. V. FOSBERY, V.C., H.M. Bengal Staff Corps.

IN bringing before you the subject of to-night's lecture, I do so with the painful feeling that it is a very *dry* subject—indeed, one which may be instructive, but cannot be made amusing; I can only, therefore, express my pleasure and surprise that the uninviting nature of my title should not have prevented more from attending this evening.

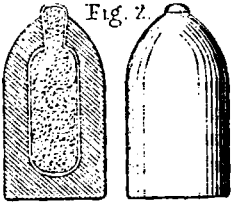
In treating this subject, I propose to show what an explosive bullet is; give some idea of its history and construction; its effects; and in what way it may be applied to military purposes. I shall notice the objections usually made to such a use of it, leaving each to form his own opinion as to the real position of the question of its rejection or adoption as a weapon of war.

An explosive bullet stands in the same relation to a military or sporting rifle, as does a percussion shell to a field or siege gun. It is, properly speaking, a *shell* calculated to explode on striking its object, and to give, whether by the shock or the flame of such explosion, effects different from those of the solid bullet.

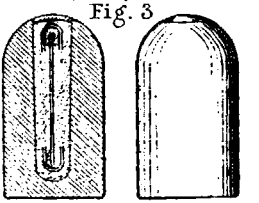
Metford
Fig. 1.



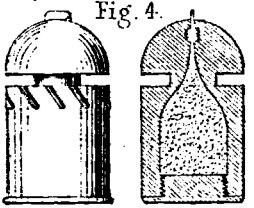
Copper Bottle and Sand Core Shell.
Fig. 2.



Lang
Sporting Shell
Fig. 3

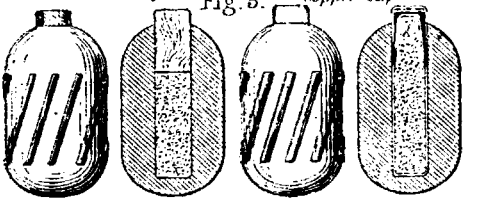


Systeme Devisme
Fig. 4.

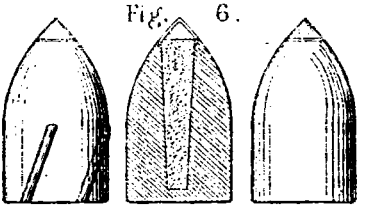


Norton
Fig. 5.

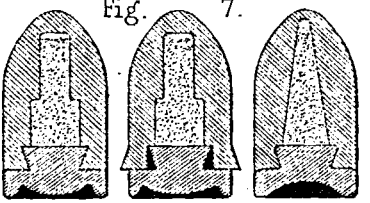
Wood Plug *Tin Tube and Copper Cap*



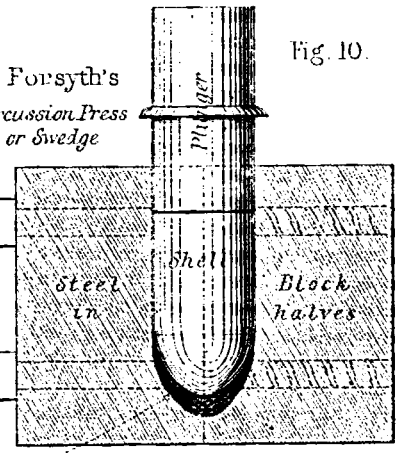
Jacob
Fig. 6.



Fosbery Shell
Fig. 7.

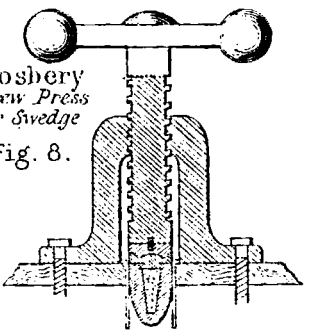


Forsyth's
Percussion Press or Swedge
Fig. 10.

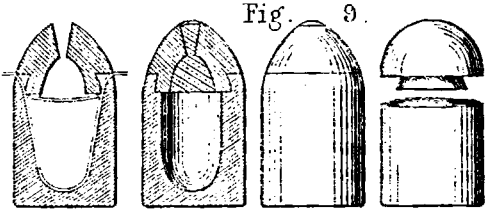


Cavity into which the Shell is rammed.

Fosbery
Screw Press or Swedge
Fig. 8.



Forsyth's
Black Buck Shell
Fig. 9.



For instance, an explosive bullet or *rifle-shell* (as we may call them, if it be understood that in doing so the RIFLE is to mean a rifled small arm), will prove almost certain death even to animals too formidable to be fired at with safety with a single ball. A rifle-shell will also explode gunpowder enclosed in stout cases, such as artillery limber-boxes at extreme ranges, and when an ordinary bullet would in no ways affect it. Further, the explosion of a single Enfield rifle-shell of large capacity can be seen and heard at distances of 1,000 or 1,200 yards; whereas the ordinary bullet gives no sign. It is on these properties that its usefulness depends.

Rifle-shell are already well understood and habitually used by most sportsmen who attack the heavy game of Asia and Africa; and to their growing use it is owing that accidents from the charge of the wounded buffalo, rhinoceros, tiger, and elephant, are becoming every day less frequent and less fatal. When they were first introduced into the sporting field, there were not wanting those who denounced their use as "not giving the poor beast a chance," namely, of devouring or demolishing the sportsman, whom they considered as taking a mean advantage of his game, and being rather a poor fellow than otherwise. But in spite of such remarks, the shell has been gradually improved, and this use of it, in some form, has become at the present time almost universal.

I think indeed that no really merciful man would condemn the animal on which he draws trigger, to a lingering end from a single bullet-wound, or to the slow torture of being shot to death, as were notably some of the elephants killed by Mr. Gordon Cumming; when he may if he pleases use an instrument which will strike it down as by a flash of lightning. Even though by doing so he should deny himself the pleasurable excitement of a charge, with perhaps the demolition of some unhappy beater. In the same manner we hear the use of rifle-shell in war condemned as cruel, cowardly, or useless. If I should succeed in raising a doubt as to whether it is in truth either the one or the other, at all events a step will have been made towards the dispassionate discussion of the subject, which is all one can hope for from a paper such as the present.

I will now, if you please, enter on the history and construction of these missiles, and pass on to their uses and the consideration of the validity of the arguments used against them.

The rifle-shell was (there is, I believe, no doubt) originally proposed and made use of by Captain Norton about the year 1826, and differed but little in principle from many of those in use at the present day. I have here one of his earliest explosive bullets (Plate I, Fig. 5); it is, as you see, mechanically fitted to a polygroove-rifle, rounded both in front and rear, and having a cylindrical hollow some three-sixteenths of an inch in diameter, reaching from its apex to within a short distance of the base. In this was placed some detonating powder, and a wooden plug inserted in the head, acted as a striker on the shell reaching its object. Another form carried a small tin tube, fitted into the hollow; this was filled with gunpowder and a percussion-cap placed on the end of the tube, produced ignition in like manner at the moment of impact.

The next great inventor of rifle-shell (Fig. 6) was General John Jacob, of Jacob's Horse.

A drawing of the shell of which he is the author is before you. In such a paper as this it would be impossible to do justice to the value of the experiments carried out, under every disadvantage of climate and distance from the centres of manufacture, by that extraordinary officer. Suffice it to say, that for *ten years* he carried on, at a vast expense, and solely on his own account, experiments on a scale that, till then, had scarcely been attempted by the small arms department of any Government; and obtained years ago, results which have been but rarely surpassed, even up to the present time. After having perfected a system of rifling and construction, both of weapon and projectile, he placed the results of his labours at the disposal of his country; adding, as he did so, that the rifle-shell, if properly understood and used, would one day prove the most formidable weapon of destruction ever invented by man.

We next have the Metford shell (Fig. 1), at first sight merely a Jacob shell, having its cavity filled with percussion powder, and the orifice stopped with wax. Those, however, who should so regard it, and therefore despise in their hearts this projectile as at present introduced into the Service, would do wrong. The detonating arrangement of the shell may itself be in appearance excessively simple, but it is also wonderfully effective. Simple as it is, it cost its inventor many thousands of experiments before he was able to render it both safe to manufacture as well as to handle, and certain of explosion. It was during these experiments also, that he discovered the method of so distributing the weights of the Enfield bullet as to improve its shooting some 20 per cent.; a discovery to which much of the accuracy of shooting displayed by our converted rifles is due. His shell was also the cheapest yet made, rendered so by the ingenious machinery by which the inventor produced them; this is now-a-days no small a consideration.

A shell invented by Colonel Boxer, of which I have unfortunately no specimen, was long tried against Mr. Metford's shell. It had the advantage of carrying a flame of some duration into an enemy's ammunition waggon, and was in this way exceedingly formidable; but was also, it is said, somewhat costly to manufacture.

The question of the adoption of a shell into the Service, was in a measure settled, when, in 1862, I invented the shell which you see here represented (see Fig. 1).

I was, as you will see, indebted to Mr. Forsyth, for the idea of forming a shell in two parts, as his so-called Black-Buck shell (Fig. 9) had been already figured and described in the "Field" newspaper. But as we were in search of different objects, a very different method of setting to work was necessary in both cases. Mr. Forsyth wanted a large shell of great interior capacity, for short ranges, and cared not for the trouble and inconvenience of its manufacture, or its inaccuracy of flight, beyond a hundred yards or so.*

* The method of charging and completing the Black-Buck shell was as follows: The lower portion was filled with gunpowder, and a patch of linen or calico placed over it. The upper portion was then forced in, and the two united by hammering

I wanted a military shell also of greater capacity than could be obtained by merely hollowing the head; simple and cheap to manufacture in large quantities; and accurate up to the longest ranges.

In order to gain penetration, and have the power of increasing that penetration at will, I made the head of solid lead, and loaded the shell at the base, a thing never, I believe, before attempted. To gain a proper balance, I adopted, after many experiments, this peculiar form of hollow; and for rapidity of manufacture, a tapered tube, through which, by a screw or otherwise, the shells could be thrust one after another, and so be quickly completed.

As you will see, therefore, this shell differed in many important particulars from Mr. Forsyth's, even in the method of forming the dovetail joint, which is, indeed, their only point of resemblance—and these differences were wholly mine. It took me next a whole year of experiment before I could get it to shoot. In 1863, at Mr. Forsyth's request, I forwarded him, through a friend, a sketch of my shell and apparatus, which had then just been favourably reported on by the Indian Select Committee, and in a correspondence which ensued, clearly pointed out the points of the invention, which I claimed as original. The question, as between the two shells, was, moreover, referred to Sir Hugh Rose, who at once recognized them as distinct inventions, intended for different purposes, and claiming notice on different grounds.

Mr. Forsyth was, however, then preparing for the press a work on "the Sporting Rifle and its Projectiles;" and although I was fairly warned of what I might expect from him, I confess I was a little surprised at seeing in his published work a wood-cut taken from my sketch, and entitled, without the slightest acknowledgment, one of the "modifications of which my shell admits." He has since, I find, wholly adopted that modification, and further given himself the trouble of re-inventing my screw swedge to make it with. I merely mention these circumstances, as many of you have, I dare say, seen the shell now often called the Forsyth shell, and might recognize it in the drawing, without being aware of its history and origin. Whatever merits it may possess as a military shell have been fully recognized by the Government of India, for which I was then working. For five years I have taken no steps to dispute with Mr. Forsyth his right to what he has appropriated; nor should I do so now, did I not think it my duty, when speaking of it in this place, to vindicate such claims as I possess to the invention. These I now submit to your judgment, and through this Institution to that of my brother Officers of the Services. Mr. Forsyth is wholly welcome to whatever credit he may have obtained from others by this conduct for an invention not entirely his own. I trust, in speaking warmly of it I offend no one present; for, indeed, I think every gentleman here will admit that reputation got in this way, is purchased at a price which he would himself be unwilling to pay for it.

in his swedge. They were then taken out, the upper compartment, filled with detonating powder, and stopped with wax, or a metal plug.—G. V. F.

The shell here shown (Fig. 2) is another which has also been proposed for both military and sporting purposes, by various inventors, and it may be called a copper bottle or sand-core shell, according as the lead is poured round the one or the other. You must see, however, that, in either form, it would be tedious or expensive to make in large quantities.

Fig. 3 represents an ingenious and handy plan of Mr. Lang's, by which any hollow-headed bullet may be converted into an effective shell. He inserts in the hollow a short wire, placing a copper cap on each end, fills the hollow with gunpowder, and stops it with wax; on striking the object one at least of the caps is certain to ignite it.

Next in order, though indeed perhaps its size and importance should have entitled it to an earlier notice, comes the shell of the *Système Devisme* (Fig. 4), invented by the celebrated gun-maker of the Boulevard des Italiens, who was good enough lately to fire several of the shell before me with wonderful effect, and has kindly lent me the arm, which you see here, by which to explain to you his system. His shell, as you will perceive, is an extraordinary-looking missile, and very different from what, in our ideas, looks like work. I have, however, seen letters from Jules Gerard and other French and foreign sportsmen of undoubted character, who speak of its extraordinary performances in no measured terms; and, indeed, from what I saw myself, I should be induced to think it, for sporting ranges, by far the most destructively effective shell known, owing to its immense explosive power.

We have thus far then treated of the explosive bullet or small-arm shell as to its history and construction. Some, it will be readily seen, are well adapted for the purposes they are intended to fulfil, others are but ingenious or expensive toys; but all go to prove that such a projectile has long been considered a desirable addition to the sportsman's battery, if not to the ammunition pouch of the soldier. For my own part, I do not hesitate to avow my conviction that sooner or later, they must be very extensively used in military operations, both from their immense utility, and from the profound moral effect which their employment even in small numbers cannot fail to produce. As I believe I was the first to use these projectiles in the field, systematically, and to any large extent, and as their high utility on several occasions has been acknowledged by many distinguished officers, who from what they then saw, have been led to advocate their habitual employment, a short account of their use and effects may be interesting here. You will forgive me for any seeming egotism, but the fact is, that as the shell were employed under my sole direction, it becomes necessary to speak in the first person, and I shall make my account as mere a statement of facts as possible.

In a lecture which I had the honour of delivering lately in this theatre, I described some of the events of the Umbeyla campaign, a series of operations against the mountain tribes of our Indian north-west frontier, which took place in the great hill range, lying about sixty miles north-east of Peshawur, and between that post and the Indus.

The story of these rifle-shells will tell you how I came to be concerned in those operations, and what their special uses under such circumstances are.

In the summer of 1863, my rifle-shell had been for some time under the consideration of the Government of India, and in the month of August of that year, a Select Committee was ordered to assemble at Meerut, to experiment and report on them. Their report was favourable as to their accuracy of flight, safety in use, and general effect on some artillery tumbrils, which indeed they had blown into a great many pieces; and after the conclusion of the experiments, I went on to Simla, where the coming hill campaign was beginning to be talked of. Whilst there I was asked to assist Major Gordon, Chief Inspector of Musketry, in carrying out some experiments, with a view to ascertaining the changes in sighting the Enfield rifle which should be made when firing at extreme angles of elevation and depression. European regiments, armed of course with that weapon, were to accompany the native troops into the hills, and it was justly thought that they might be placed in many situations where such a knowledge would be invaluable. These experiments were, however, barely commenced, when the force was in readiness to start, and no results of a sufficiently accurate nature had then been obtained.

Another serious difficulty moreover now occurred to us. The English soldiers had been trained, for some years past, in judging distances entirely in the plains of India, how then, even were they most accurately posted up in every variation of angle, could they estimate the distances of their enemies in the clear air of the mountains?

I had been then for two years a regimental instructor of musketry, and was necessarily in good training as a judge of distance; yet I found myself unable to estimate any distance whatever among the hills with any approach to accuracy. Any one who has shot much both in the plains and the mountains will at once, I think, admit how totally different are the rules to go by, according as he is placed in the one or the other. Even that forlorn hope of watching for the dust thrown up by the bullet would be unavailing in the hills, as there is no dust there. A bullet striking on a rock gives no indication whatever to the firer.

It occurred to me, however, that though a bullet does not, a shell most assuredly does, give such indication, and I was thus led to propose the use of my shell as a ready means of estimating distances on service, more especially amongst mountains.

Lord Strathnairn, then Sir Hugh Rose, and Commanding-in-Chief at the time, saw in this proposition a solution of the difficulty; and within three days I was on my way to join the force with apparatus for making up the shell on the spot, with a sufficient supply of chemicals, and letters which led to my obtaining the command of a body of sharpshooters, who should test the effects of those shell on the mountains or mountaineers, as the case might be. These men, thirty-two in number, were the best shots of Her Majesty's 71st and 101st regiments, and were speedily furnished with a certain proportion of shell ammunition per man, instructed to use it chiefly to ascertain their

distances, but permitted to fire a little freely with it at first, until they should become accustomed to its use.

The first occasion on which its effects were fairly tested was the following:—

During one of the first few days after the breaking out of open hostilities, word was passed down to camp that the outposts on the extreme right were in need of reinforcements; accordingly the mountain train guns, one hundred European soldiers, a native infantry regiment, and my party of marksmen were at once ordered up in support. On our arrival at the summit of the southern ridge, which bounded the Umbeyla Pass, in a situation some 3,000 feet above the main camp, we speedily discovered why we were wanted. Colonel Keyes who was in command of the advanced posts, had accidentally discovered that an attack in force on his own position was in the act of preparation. He, without waiting for it, boldly took the initiative, went at an enemy of whose numbers he could have had but an indefinite idea, and drove them before him to the end of the ridge. Here they crossed an open plain, and took up a strong position on a high peak, known to us as the Conical Hill, and he having but his own regiment with him, and now fully aware of their numbers, sat down on the last spur of the range, and sent for reinforcements.

When we came up, the mountain train guns were lifted from the mules, and the troops drawn up in a hollow, concealed from the enemy, whose dark masses and waving standards could, however, plainly be seen from a ridge a few paces to the front. The mountain train had evidently come far enough, and must open fire from this ridge, so also must the marksmen, for the present, at all events, and now came the question of distance. One said one thing, and one another, and at last I was consulted by the officer commanding the Artillery. Three or four rifle shell gave an average distance of 650 yards for the main body of the enemy, amongst whom the little shells bursting, seemed to cause some surprise.

The fuzes are now, therefore, cut for this distance, the marksmen all carefully posted, given the range, and ordered to fire with shell, but reserve their fire until the artillery opened.

The guns, masked by sections of grey-coated gunners, hardly distinguishable at any distance from the rocks themselves, are dragged up by hand to their places on the crest of the ridge, and aim is taken between the legs of their covering parties at a dense mass of the enemy, clustered round three or four tall standards, about the very apex of the cone. A few puffs of smoke here and there curl up from amongst the pines opposite, and the matchlock balls whistle overhead, or stick with a loud whack into the stems of the trees about.

Suddenly, at word of command, the grey sections wheel right and left, and show them the bright brass howitzers ready for work. Bang goes one of them, and everybody cranes his neck to watch the shell across the valley. All right, says somebody, as a flash and round cloud of smoke come out just at the proper place, and down goes the tall standard, and a dozen of its defenders with it.

More shell follow this example, and smaller puffs of smoke now

and again show that the marksmen, too, have found out the proper place, and are doing good work.

Presently the great mass of the enemy seems to waver, and here and there a man steals away, and vanishes amongst the trees.

Seeing this, Colonel Keyes gets his men together, sounds the double, and with his gallant regiment dashes across the plain, storms the hill, captures a standard, cuts up many of the enemy, and sends the remainder flying on the road home, the artillery shelling them pleasantly as they go. And so the action is over.

So immediate a success was, it is said, mainly due to the very rapid and accurate shell fire of the artillery, and in a measure also to that of the marksmen, which shook the enemy, and prepared their minds for the success of the final charge.

In producing this accuracy by ascertaining the exact range, I think the rifle-shell may claim to have done good service, and in some measure contributed to the results of the day.

Whether this be so or not, however, I think that you will agree with me that so cheap, expeditious, and certain a way of ascertaining range in difficult situations must have practical value. It may be said that the artillery could have done just as well by means of a trial shell or two. True, they could have done so, but then a first shell well pitched always carries with it a moral effect greater than that of any of those that follow, besides which English-made artillery shells cost something considerable on the tops of Indian mountains, some 60 miles or so from your base of operations, and still further from the nearest magazines, and must not be wasted if it be possible to avoid it,—as I think I have shewn it is.

After this, these shell were used frequently, both as a means of determining distances, and also on the enemy generally, when it became desirable to produce a strong moral effect. So well did they answer the latter purpose, that they were at the pains of sending us a deputation, under a flag of truce, praying that their use might be discontinued.

They considered them unfair on two grounds, I believe; firstly, because they exploded in an objectionable way; secondly, because there was nothing they could collect of them afterwards, as they could do ordinary bullets and the balls of the spherical case, and this they thought a great hardship. The spherical case indeed were a great prize to them, when, as sometimes happened, they failed to explode; for they used to shake out the powder, and then use the case as a pot in which to melt the bullets, until one day a sad accident made them cautious.

We had discovered its propensity; and several of the Indian Shrapnel fuzes having proved failures, we used common shell instead. This they were unaware of, and tried the melting process with one of the latter, a 24-pounder. We saw them dig it out, carry it carefully to their fire, and sit round till the lead should be ready. I need not tell you with what results. But I digress.

I attribute to the use of rifle-shell by the marksmen a degree of steadiness and confidence which enabled those thirty-two men to put

hors de combat, in four hours' hard fighting, no less than 180 men, at an expenditure of 12½ rounds per man hit—as high a result as has, I believe, ever been attained. One of the marksmen, Corporal Symester, of the 101st, picked off one of the enemy's chiefs at 750 yards; the distance of the spot where he stood having been before found by means of rifle-shell.

The services of these men were in constant requisition to indicate to their comrades, or to the artillery, the distance of any point on which fire was to be brought to bear, and were highly appreciated.

When General Chamberlain resolved on a change of position, and occupied the south side of the pass only, the opposite hill and our former posts on that side fell of course into the hands of the enemy; and we were continually annoyed by greater or less bodies of men, to whose fire from thence it became necessary to reply effectively.

I was enabled, by means of rifle-shell and a pocket compass, to make a rough and ready sketch of the position, for the use of the artillery and infantry, and accurately to lay down all the prominent points of the opposite mountain usually occupied by the enemy, with their distances from each work or *place d'armes* on our own side. When a regular plan was constructed by the engineers afterwards, I had an opportunity of comparing the two. There was a difference, but only in one distance, and that difference was only 20 yards in 950.

Such is a sketch—too long I fear—of what rifle-shell have already done. It now comes to be a point for consideration, whether such advantages as I have described, are sufficient to overcome the repugnance which, reasonably or unreasonably, undoubtedly exists to their use as weapons of war. I will endeavour to state the objections, usually made, as fairly as possible, and, giving them their full weight and importance, leave it to your judgment whether they should or should not be deemed prohibitory to us. That they will be so to other nations, or for a long period, I have much doubt.

The Prussians are said to be already arming some few regiments with the new shell-rifle of Herr Von Dreyse, which carries a shell charged with 2½ drams of powder, and is thus a far more formidable affair than any of those yet proposed for use in England. Another Power will, I believe, adopt them for use in the mitrailleuse, or many-barrelled breech-loading cannon. If this be so, and if the effects of rifle-shell prove in the field to be at all as great as I believe they will, their general adoption will follow as a matter of course, as has that of so many other inventions in war materiel, denounced in the first instance as diabolical, or ridiculed as useless.

In the meantime, however, an important advantage has not unfrequently been gained by the first to see the utility, override the objections, and boldly use them.

In the present case the objections usually made, are the very ones I have just mentioned, viz., that rifle-shell are either Satanic, or useless —if not both.

It is a cruel method of destroying your enemy, only to be classed with the bushman's arrow or the blow-gun and Wourali poison, says

one, and takes to himself credit, and honestly enough, I doubt not, for humanity, and a kind regard for the comfort of his fellow-creatures, even when arrayed in arms against him. Yet he will take a scientific pride in the acknowledged weapons and usages of war, and use them with a good conscience to the best effect.

An enemy approaches him by sea, let us suppose; he charges that enemy's vessel with his ram and involves 800 souls in a common and instant destruction. He fires a torpedo by electricity from a wooden shanty two miles off, under his feet, with a like effect; or, finally, he pours from his cupolas into his Martin shells the molten iron which shall burn its way alike deep into the wood of the ship and the tortured bodies of the seamen; in effect, in the terrible words of the old Letters of Marque, he burns, sinks, and destroys,—the human element inclusive. On land he disembowels him with rockets, buries in his path the self-acting fougass; tears his body with the angular fragments of segment-shell; plies him with grape and canister, old iron, and broken bottles; undermines him; fills up his wells, and destroys his habitations and supplies, and makes him to die of hunger, of thirst, and exposure, or linger, it may be, for weeks, from the fearful wounds of the bayonet, the sabre, or the Snider-Enfield bullet, the latter, by the bye, almost equalling in their effects on the body any produced by rifle-shell, as may be seen by the fragments into which such a bullet divides when fired into water. All this, moreover, with the best possible intentions and most serene good faith. But let me ask you, is this really humanity? Are any of the deaths to which the greater number of the killed in war are put, strictly speaking, humane? or, if they are not, what is this humanity of which so much is made? Is it indeed a branch of that quality which leads us to clothe the naked and feed the hungry, only developed in another direction? or is it not rather a term of variable quantity, applied to homicidal cruelty, and so adjusted as to be always just one step behind the last military discovery of the day?

Have we not heard that, in the dark ages, humanity beat out men's brains with a mace, whilst cruelty used the lance, the sword, or the arrow, and that the Bishops of the period, therefore, rode into action with the mace, so as to kill without shedding of blood? A very nice distinction indeed, as you will admit. In later times were not Congreve and Shrapnel denounced as monsters for the initiation of inventions, in whose perfection we rejoice to-day? and did not even General Elliot's red-hot shot find objectors, besides the unhappy crews of the Spanish block ships? Do not think, when I speak in this way, that I am proposing a new method of death, and doing a little by special pleading for its adoption. I am merely endeavouring to place before you the light in which similar inventions of accepted value have been regarded in times past, and mooting the question as to whether the present objectors to the use of rifle-shell have or have not more right on their side.

We next come to the question of utility. As a means of ascertaining range, you have already had their claims to notice laid before you. We now come to their use against the *matériel* and *personnel* of an

army. A rather favourite objection to their use against the limbers and ammunition boxes of the artillery, is that the powder and projectiles are so stowed in the boxes that the latter protect the former and render the whole invulnerable.

To this it may be answered, that this is undoubtedly, in great measure the case on a battery first coming into action. But we must remember that every round fired by it denudes in some measure the powder of this protection, and renders a serious, if not disabling, explosion, at all events, more possible; further, large cartridges are not nice things to handle, nor are powder cases pleasant to open when the flashes from rifle-shell are every moment bursting from the wood of the carriages and boxes, or starting from the iron of the wheels and guns; under these circumstances, even supposing the *personnel* of a battery to remain untouched, the service of the guns could hardly be carried on with the same *sang froid* as usual, even by the steadiest and best trained men. The more highly trained the men, of course the more fully aware would they be of the danger.

As to reserve small arm ammunition, the Boxer cartridge fortunately gives us a complete immunity from apprehension. But this is not the case with the small arm ammunition of other powers, with the exception perhaps of the French. If, therefore, our shell are to be used as now proposed, only on ammunition boxes, the artillery must be the principal sufferers. But in aiming at the carriage, one would be very apt to strike the man, supposing him to place himself in the way. That is, if rifle-shell are to be used against artillery *matériel*, we must include the men and horses belonging to the batteries—if not in theory, at all events in practice. In practice, therefore, it will be lawful and proper to shoot an artilleryman with a rifle-shell while in the execution of his duty, but nobody else. Humanity forbids us to destroy an infantry or cavalry soldier with anything but a solid or hollow-headed bullet.

We now come, I think, to a clear idea of what this inconsistent feeling really is. It is the desire to spare the infantry and cavalry soldier not one atom of suffering, not one pang in death (for the shell kills much more instantaneously and more mercifully than the bullet), but that unpleasant feeling which attaches to any SPECIES of death which men have not been accustomed to look in the face,—that dread of the unknown—which makes a child fear to enter a dark passage without a light—which keeps country people from a haunted lane—the bravest sailor from a harbour known to contain torpedoes—or makes gallant troops shaky on ground which is supposed to be mined.

That feeling which is—say what you will—at least akin to the sentiment which more than all the bloodshed in the world has lost its battles, and which it should be the object of every improvement in war materiel to produce, whether by its known or by its supposed effects—I mean fear.

Have not the Strasbourg experiments added a new terror to the French national weapon, whose *prestige* has been augmented ten-fold by the horrid nature of the wounds it produces, wounds which, since then, the French army surgeons at Mentana have declared to be

beyond everything they had ever seen—and from their nature almost always fatal; and is there not too an undefined, and perhaps exaggerated, feeling of mingled curiosity and dread in many minds abroad as to the effect which will be produced when that mysterious *mitrailleuse* of the Emperor, whose secret is so carefully kept, once sees the light of a day of battle?

Such dread would ten-fold attend the steps of a power which should be known to possess an infantry rifle-shell, and boldly declare its intention of using it, if compelled to fight for its existence.

I firmly believe, that a greater effect would immediately accompany its first use than has done the substitution of the muzzle-loading rifle for the smooth-bore, or even that of the breech-loader for the former.

No one will face a rapid and well sustained infantry fire of shell, as all who have seen them much used, are agreed, at all events until accustomed to them; and this takes time. But if they will not face them, then life is saved rather than destroyed. In fact the old argument holds good for each fresh step in advance; the more terrible the recognised engines of destruction, the greater will be the prospect of maintaining peace; or, should war break out, the shorter of necessity will be its duration.

As this is an object for which we all, soldiers as well as civilians, should strive, I trust that the rifle-shell may receive, at all events, thoughtful consideration, as a candidate for the office of peace-maker to begin with, and as having a tendency to shorten any war once commenced, where its use is properly persevered in.

Lieut.-Colonel FLETCHER, Scots Fusilier Guards: There is one question which I should like to ask, viz., that when you used the rifle-shells, did you use them from the Enfield, and had the rifles to be specially sighted for the purpose?

Major FOSBERY: They were used from the Enfield, and the weights were so adjusted that they travelled with the same sighting as the bullet; it was by that means we were able to ascertain our distance.

Colonel FLETCHER: Could they be used with a smaller bore than the Enfield?

Major FOSBERY: Perfectly. Here is a specimen of a smaller bore than the Enfield, viz., ·451, many of which have been fired successfully.

The CHAIRMAN: If no gentleman has any further observations to make, it remains for me to propose a vote of thanks to Major Fosbery for the paper he has brought before us. I am sorry that there are not some of the members of the Council present, who have given great attention to this subject, for it is not one with which I am practically acquainted. There is one gallant officer here who could address us on the subject; but I suppose he feels himself tied by his position as Chairman of a Committee on breech-loaders. There is one omission in Major Fosbery's statement, which perhaps I may supply. In that very action which he described so graphically, in which these shells did such good execution, and were, likewise, so valuable in enabling the men to determine their distance from the enemy, Major Fosbery earned the distinction of the Victoria Cross. That I think is the only observation that I have to make. I will now in the name of the meeting return our best thanks to Major Fosbery, for the very interesting paper he has read, and also for the very clear manner in which he has placed these various inventions, as well as his own, before the meeting.